Mathematische Zeitschrift

Herausgegeben von **T. tom Dieck**, Saarbrücken
E. Heinz, Göttingen
A. Pfluger, Zürich
H. Salzmann, Tübingen
H. Wielandt, Tübingen
K. Zeller, Tübingen

Wissenschaftlicher Beirat
B. Eckmann, Zürich · P. Gabriel, Bonn
H. Heyer, Tübingen · K. H. Hofmann, New Orleans
W. Klingenberg, Bonn · U. Krengel, Göttingen
W. Magnus, New York · G. Pickert, Gießen

Band 130 · 1973

Springer-Verlag · Berlin · Heidelberg · New York

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, even in microform, is transferred to the publisher.

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der fotomechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten. Jedoch wird gewerblichen Unternehmen für den innerbetrieblichen Gebrauch nach Maßgabe des zwischen dem Börsenverein des Deutschen Buchhandels e.V. und dem Bundesverband der Deutschen Industrie abgeschlossenen Rahmenabkommens die Anfertigung einer fotomechanischen Vervielfältigung gestattet. Wenn für diese Zeitschrift kein Pauschalabkommen mit dem Verlag vereinbart worden ist, ist eine Wertmarke im Betrage von DM 0,40 pro Seite zu verwenden. *Der Verlag läßt diese Beträge den Autorenverbänden zufließen.*

Springer-Verlag / Berlin · Heidelberg · New York
Printer: Universitätsdruckerei H. Stürtz AG, Würzburg
Printed in Germany. – © by Springer-Verlag Berlin Heidelberg 1973

Inhalt/Contents

Amann, H., Weiss, S. A.: On the Uniqueness of the Topological Degree 39

Atkinson, F.V.: Nonlinear Extensions of Limit-Point Criteria 297

Bachmann, O.: Über projektive Ebenen des Lenz-Barlotti-Typs I.3 119

Bauer, F.W.: Boardman's Category and the Process of Categorical Stabilization . . 95

Beekmann, W., Boos, J., Zeller, K.: Der Teilraum *P* im Wirkfeld eines Limitierungsverfahrens ist invariant 287

Betsch, G.: Primitive Near-Rings 351

Bickel, T.F.: Circles in (*B*, *N*)-Groups 249

Boos, J., s. Beekmann, W., *et al.* 287

Dade, E.C.: Outer Automorphisms Centralizing Every Nilpotent Subgroup of a Finite Group 1

Deimling, K.: Global Solutions of Ordinary Differential Equations with Lag 73

Dennett, J.R.: The E.H.P. Spectral Sequence 163

Frank, G., Wittich, H.: Zur Theorie linearer Differentialgleichungen im Komplexen . 363

Heath, P.R.: Groupoid Operations and Fibre-Homotopy Equivalence. I 207

Herrmann, C.: *S*-verklebte Summen von Verbänden 255

Jensen, C.U., Jøndrup, S.: Centres and Fixed-Point Rings of Artinian Rings 189

Jøndrup, S., s. Jensen, C.U. 189

Konvisser, M.W.: 2-Groups which Contain Exactly Three Involutions 19

Lausch, H.: On Normal Fitting Classes 67

Martineau, R.P.: Solubility of Groups Admitting Certain Fixed-Point-Free Automorphism Groups 143

Poguntke, D.: Einige Eigenschaften des Darstellungsringes kompakter Gruppen . . 107

Price, D.T.: Character Ramification and *M*-Groups 325

Salzmann, H.: Kompakte, vier-dimensionale projektive Ebenen mit 8-dimensionaler Kollineationsgruppe 235

Sandomierski, F.L.: Homological Dimension under Change of Rings 55

Schaback, R.: Optimale Interpolations- und Approximationssysteme 339

Schaller, K.-U.: Einige Sätze über Deck-Meide-Untergruppen endlicher auflösbarer Gruppen 199

Scharlau, W.: Eine Invariante endlicher Gruppen 291

Selesnick, S.A.: Watts Cohomology for a Class of Banach Algebras and the Duality of Compact Abelian Groups 313

Sharp, R.Y.: The Euler Characteristic of a Finitely Generated Module of Finite Injective Dimension 79

Struble, R.A.: Operator Homomorphisms 275

Wahl, W. v.: Über die Hölderstetigkeit der schwachen Lösungen gewisser semilinearer elliptischer Systeme 149
Weiss, S. A., s. Amann, H. 39
Williamson, A.: On Primitive Permutation Groups Containing a Cycle 159
Wittich, H., s. Frank, G. 363
Wood, G. J.: A Lattice of Homomorphs 31
Zeller, K., s. Beekmann, W., *et al.* 287
Zemmer, J. L.: Valuation Near-Rings 175

Indexed in Current Contents

INSTRUCTIONS TO AUTHORS

A. General

Papers submitted for publication may be written in English, French or German. A **summary** for Zentralblatt für Mathematik (including key words for classification) should be attached.

To speed up publication, authors will receive **only one set of proofs**: provisionally numbered page proofs. Authors are requested to **correct typographical errors only**; they will be charged for corrections involving changes, additions or deletions to the original manuscript.

Manuscripts must be in their **final form,** typed on one side of each sheet only, with double spacing and wide margins. Formulae should be typewritten whenever possible. Mimeographed copies are not acceptable unless clearly legible.

Please include a "Note for the Printer" explaining markings used. See suggestions overleaf.

Diagrams should be submitted on separate sheets, not included in the text. They should be drawn in Indian ink in clean and clear uniform lines, the whole about twice the size of the finished illustration. Inscriptions should allow for the figure 1, for example, to be about 2 mm high in the final version (i.e. 4 mm for reduction $\times \frac{1}{2}$). The author should mark in the margin of the manuscript where diagrams may be inserted.

Footnotes, other than those which refer to the title heading, should be numbered consecutively and placed at the foot of the page to which they refer (not at the end of the article).

Please give on the first page of the manuscript a **running head** (condensed title), which should not exceed 70 letters including spaces.

References to the literature should be listed at the end of the manuscript. The following information should be provided for **journal articles**: names and initials of all authors, full title of the paper, name of the journal, volume, first and last page numbers and year of publication. References to **books** should include name(s) of author(s), full title, edition, place of publication, publisher and year of publication.

Examples

Bombieri, E., Giusti, E.: Harnack's inequality for elliptic differential equations on minimal surfaces. Inventiones math. **15**, 24–46 (1971).

Tate, J.T.: *p*-Divisible Groups. In: Proceedings of a Conference on Local Fields, pp. 158–183. Berlin-Heidelberg-New York: Springer 1967.

B. Marking

1. Text

Words or sentences to be set in *italics* should be marked by single underlining.

The words **"Theorem", "Proposition", "Lemma", "Corollary"** etc. are normally printed in **boldface**, followed by the formulation in italics (to be underlined in the manuscript).
The words "*Proof*", "*Remark*", "*Example*", "*Case*" etc. are printed in italics, and "Definition" in boldface with the formulation in ordinary typeface.

2. Formulae

Letters in formulae are normally printed in italics, figures in ordinary typeface.
It will help the printer if in doubtful cases the position of indices and exponents is marked thus: $b\,\wedge$, $a\,\forall$. Spacing of indices and exponents must be specially indicated ($A_m{}^{n}{}_{n}{}^{m}$), otherwise they will be set (A_{mn}^{nm}).
Underlining for special alphabets and typefaces should be done according to the following code:

single underlining:	small letter
double underlining:	capital letter
brown:	boldface (headings, boldface letters in formulae)
yellow:	upright (abbreviations e.g. Re, Im, log, sin, ord, id, lim, sup, etc.)
red:	Greek
blue:	Gothic
green:	Script
violet:	the numerals 1 and 0 (to distinguish them from the small letter *l* and the capital letter *O*)

The following are frequently confused:

$\circ, o, O, 0$; $\cup, \mathbf{u}, \bigcup, U$; $\times, x, X, \kappa$; $\vee, v, \nu$; $\theta, \Theta, \phi, \varphi, \Phi, \varnothing$; $\psi, \tilde{\Psi}$; $\varepsilon, \in$;

a', a^1; the symbol *a* and the indefinite article a;

also the handwritten Roman letters:

c, C; e, l; I, J; k, K; o, O; p, P; s, S; u, U; v, V; w, W; x, X; z, Z;

Please take care to distinguish them in some way.

C. Examples

1. Special alphabets or typefaces

Script	$\mathscr{A}, \mathscr{B}, \mathscr{C}, \mathscr{D}, \mathscr{E}, \mathscr{F}, \mathscr{G}, \mathscr{H}, \mathscr{I}, \mathscr{J}, \mathscr{K}, \mathscr{L}, \mathscr{M}, \mathscr{N}, \mathscr{O}, \mathscr{P}, \mathscr{Q}, \mathscr{R}, \mathscr{S}, \mathscr{T}, \mathscr{U}, \mathscr{V}, \mathscr{W}, \mathscr{X}, \mathscr{Y}, \mathscr{Z}$ $a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z$
Sanserif	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
Gothic	$\mathfrak{A}, \mathfrak{B}, \mathfrak{C}, \mathfrak{D}, \mathfrak{E}, \mathfrak{F}, \mathfrak{G}, \mathfrak{H}, \mathfrak{I}, \mathfrak{J}, \mathfrak{K}, \mathfrak{L}, \mathfrak{M}, \mathfrak{N}, \mathfrak{O}, \mathfrak{P}, \mathfrak{Q}, \mathfrak{R}, \mathfrak{S}, \mathfrak{T}, \mathfrak{U}, \mathfrak{V}, \mathfrak{W}, \mathfrak{X}, \mathfrak{Y}, \mathfrak{Z}$ $\mathfrak{a}, \mathfrak{b}, \mathfrak{c}, \mathfrak{d}, \mathfrak{e}, \mathfrak{f}, \mathfrak{g}, \mathfrak{h}, \mathfrak{i}, \mathfrak{j}, \mathfrak{k}, \mathfrak{l}, \mathfrak{m}, \mathfrak{n}, \mathfrak{o}, \mathfrak{p}, \mathfrak{q}, \mathfrak{r}, \mathfrak{s}, \mathfrak{t}, \mathfrak{u}, \mathfrak{v}, \mathfrak{w}, \mathfrak{x}, \mathfrak{y}, \mathfrak{z}$
Boldface	**A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z** **a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z**
Special Roman	$\mathbb{A}, \mathbb{B}, \mathbb{C}, \mathbb{D}, \mathbb{E}, \mathbb{F}, \mathbb{G}, \mathbb{H}, \mathbb{I}, \mathbb{J}, \mathbb{K}, \mathbb{L}, \mathbb{M}, \mathbb{N}, \mathbb{O}, \mathbb{P}, \mathbb{Q}, \mathbb{R}, \mathbb{S}, \mathbb{T}, \mathbb{U}, \mathbb{V}, \mathbb{W}, \mathbb{X}, \mathbb{Y}, \mathbb{Z}, \mathbb{1}$
Greek	$\Gamma, \Delta, \Theta, \Lambda, \Xi, \Pi, \Sigma, \Phi, \Psi, \Omega$ $\alpha, \beta, \gamma, \delta, \varepsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, o, \pi, \rho, \sigma, \tau, \upsilon, \varphi, \phi, \chi, \psi, \omega$

2. Notations

preferred form	instead of
$A^*, \breve{b}, \gamma', \mathfrak{v}, \mathbf{v}$	$\dot{A}, \hat{b}, \tilde{\gamma}, \hat{v}$
lim sup, lim inf	$\overline{\lim}, \underline{\lim}$
inj lim, proj lim	$\varinjlim, \varprojlim$
$f\colon A \to B$	$A \xrightarrow{f} B$
f^{-1}	$\bar{f}$

preferred form	instead of
$\exp(-(x^2+y^2)/a^2)$	$e^{-\frac{x^2+y^2}{a^2}}$
$\dfrac{\cos(1/x)}{(a+b/x)^{1/2}}$	$\dfrac{\cos\dfrac{1}{x}}{\sqrt{a+\dfrac{b}{x}}}$

Graduate Texts in Mathematics

Managing Editor: **P. R. Halmos**

Graduate Texts in Mathematics is intended to bridge the gap between passive study and creative understanding; it offers introductions on a suitably advanced level to areas of current research. These introductions are neither complete surveys nor brief accounts of the latest results only. They are textbooks carefully designed as teaching aids; the purpose of the autors is, in every case, to highlight the characteristic features of the theory.

Springer-Verlag
Berlin
Heidelberg
New York
London · München · Paris
Sydney · Tokyo · Wien

Volume 1
G. Takeuti, W. M. Zaring
Introduction to Axiomatic Set Theory
2 figures. VII, 250 pages. 1971
DM 35,—

Volume 2
J. C. Oxtoby
Measure and Category
A Survey of the Analogies between Topological and Measure Spaces
VIII, 95 pages. 1971
DM 28,—

Volume 3
H. H. Schaefer
Topological Vector Spaces
Third printing corrected
XI, 294 pages. 1971
DM 35,—

Volume 4
P. J. Hilton, U. Stammbach
A Course in Homological Algebra
IX, 338 pages. 1971
DM 44,40

Volume 5
S. MacLane
Categories for the Working Mathematician
IX, 262 pages. 1972
DM 31,50

In preparation

Volume 6
D. Hughes, F. Piper
Projective Planes

Volume 7
J.-P. Serre
A Course in Arithmetic
Translated from the French

Volume 8
G. Takeuti, W. M. Zaring
Axiomatic Set Theory

Volume 9
J. E. Humphreys
Lie Algebras and Representation Theory

■ Prospectus on request

Mathematische Zeitschrift

Band 130 · (Schluß-)Heft 4 · 1973

Inhalt

Atkinson, F. V.: Nonlinear Extensions of Limit-Point Criteria 297

Selesnick, S. A.: Watts Cohomology for a Class of Banach Algebras and the Duality of Compact Abelian Groups 313

Price, D. T.: Character Ramification and *M*-Groups 325

Schaback, R.: Optimale Interpolations- und Approximationssysteme 339

Betsch, G.: Primitive Near-Rings 351

Frank, G., Wittich, H.: Zur Theorie linearer Differentialgleichungen in Komplexen 363

Indexed in Current Contents

Responsible for advertisements: L. Siegel, 1 Berlin 15, Kurfürstendamm 237,
Telephone: (0311) 8830131, Telex: 01-85411
Springer-Verlag Berlin · Heidelberg · New York
Printers: Universitätsdruckerei H. Stürtz AG, Würzburg
Printed in Germany — © by Springer-Verlag Berlin · Heidelberg 1973